

PROJECT DESCRIPTION

THIS PROJECT INVOLVES RECONSTRUCTION OF THE FULL-COLOR TRAFFIC SIGNAL AT THE INTERSECTION OF MD 140 (REISTERSTOWN RD.) AT MT. WILSON LN / GREY ROCK RD. THE INSTALLATION INCLUDES LED SIGNAL HEADS, LED COUNTDOWN PEDESTRIAN SIGNAL HEADS, APS PUSHBUTTONS AND SIGNS, AND IP-BASED VIDEO DETECTION CAMERAS. MD 140 IS ASSUMED TO RUN IN A NORTH-SOUTH DIRECTION.

INTERSECTION OPERATION

THE INTERSECTION WILL OPERATE IN A NEMA SIX-PHASE FULL-TRAFFIC-ACTUATED MODE WITH AN ALTERNATE PEDESTRIAN PHASE FOR THE SOUTH LEG AND A CONCURRENT PEDESTRIAN PHASE FOR THE EAST LEG OF THE INTERSECTION. THE MD 140 NORTHBOUND AND SOUTHBOUND LEFT TURNS OPERATE IN EXCLUSIVE/PERMISSIVE PHASING.

CONTROLLER REQUIREMENTS

THE EXISTING POLE MOUNTED CABINET SHALL BE REMOVED. A NEW FULL-TRAFFIC-ACTUATED EIGHT-PHASE TRAFFIC SIGNAL CONTROLLER HOUSED IN A BASE MOUNTED CABINET SHALL BE FURNISHED BY SHA AND INSTALLED BY THE CONTRACTOR. 2-WIRE APS CENTRAL CONTROL UNIT AND 4-CHANNEL LOOP DETECTOR AMPLIFIER SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. IP-BASED VIDEO DETECTION INTERFACE EQUIPMENT AND UPS BATTERY BACKUP SHALL BE FURNISHED AND INSTALLED BY SHA.

SPECIAL NOTES

APS WILL FUNCTION AS FOLLOWS:

TO CROSS MD 140 (REISTERSTOWN ROAD):

- A. WHEN PEDESTRIAN LOCATES AND PRESSES PUSHBUTTON FOR AN EXTENDED TIME, THE PUSHBUTTON UNIT MESSAGE WILL BE "WAIT TO CROSS REISTERSTOWN AT MT. WILSON AND GREY ROCK. WAIT."

- B. WHEN WALK PHASE BEGINS, THE MESSAGE WILL BE A RAPID TICK WHICH WILL LAST FOR THE DURATION OF THE WALK PHASE.

TO CROSS GREY ROCK ROAD:

- A. WHEN PEDESTRIAN LOCATES AND PRESSES PUSHBUTTON FOR AN EXTENDED TIME, THE PUSHBUTTON UNIT MESSAGE WILL BE "WAIT TO CROSS GREY ROCK AT REISTERSTOWN. WAIT."

- B. WHEN WALK PHASE BEGINS, THE MESSAGE WILL BE A RAPID TICK WHICH WILL LAST FOR THE DURATION OF THE WALK PHASE.

CONTACT PERSONS FOR DISTRICT #3 ARE AS FOLLOWS:

MS. ERIN KUHN
ASSISTANT DISTRICT ENGINEER - TRAFFIC
PHONE: 410-229-2381

MR. JESSE FREE
ASSISTANT DISTRICT ENGINEER - CONSTRUCTION
410-229-2421

MR. ANDRE FUTRELL
ASSISTANT DISTRICT ENGINEER - MAINTENANCE
410-229-2361

CONTACT PERSONS FOR OOTS
ARE AS FOLLOWS:

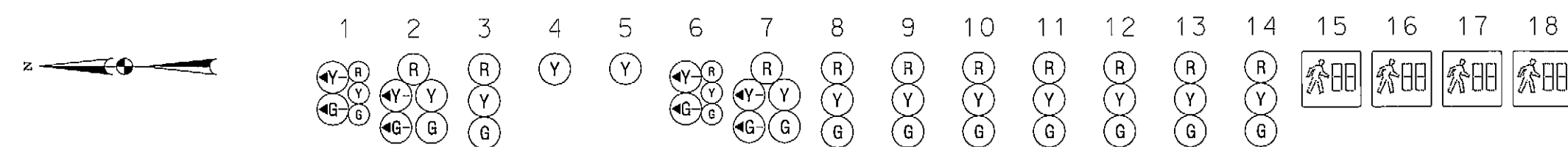
MR. AVIJIT MAJI
DIVISION CHIEF,
TRAFFIC OPERATIONS
PHONE: 410-787-7630
















MR. ROBERT SNYDER
ASSISTANT DIVISION CHIEF
TRAFFIC OPERATIONS
410-787-7631

MR. ED RODENHIZER
CHIEF, SIGNAL OPERATIONS
410-787-7650

MR. EUGENE BAILEY
CHIEF, SIGN OPERATIONS
410-787-7676

PHASING CHART



| | | | | | | | | | | | | | | | | | | | |
|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|---|
| PHASE 1 AND 5 | R | R | R | FL/Y | FL/Y | R | R | R | R | R | R | R | R | R | DW | DW | DW | DW |  |
| 1 AND 5 CHANGE TO 1 AND 6, 2 AND 5, OR 2 AND 6 | | | | | | | | | | | | | | | | | | |  |
| PHASE 1 AND 6 | R | R | R | DARK | DARK | R | R | R | R | R | R | R | R | R | DW | DW | DW | DW |  |
| 1 AND 6 CHANGE | R | R | R | DARK | DARK | R | R | R | R | R | R | R | R | R | DW | DW | DW | DW |  |
| PHASE 2 AND 5 | R | R | G | FL/Y | FL/Y | R | R | R | R | R | R | R | R | R | DW | DW | DW | DW |  |
| 2 AND 5 CHANGE | R | R | G | FL/Y | FL/Y | R | R | R | R | R | R | R | R | R | DW | DW | DW | DW |  |
| PHASE 2 AND 6 | G | G | G | DARK | DARK | G | G | G | R | R | R | R | R | R | WK | WK | DW | DW |  |
| PED CLEARANCE | G | G | G | DARK | DARK | G | G | G | R | R | R | R | R | R | FL/DW | FL/DW | DW | DW |  |
| 2 AND 6 CHANGE | Y | Y | Y | FL/Y | FL/Y | Y | Y | Y | R | R | R | R | R | R | DW | DW | DW | DW |  |
| PHASE 4 AND 8 | R | R | R | FL/Y | FL/Y | R | R | R | G | G | G | G | G | G | DW | DW | DW | DW |  |
| 4 AND 8 CHANGE | R | R | R | FL/Y | FL/Y | R | R | R | Y | Y | Y | Y | Y | Y | DW | DW | DW | DW |  |
| PHASE 4 AND 8 ALT | R | R | R | FL/Y | FL/Y | R | R | R | G | G | G | G | G | G | DW | DW | WK | WK |  |
| PED CLEARANCE | R | R | R | FL/Y | FL/Y | R | R | R | G | G | G | G | G | G | DW | DW | FL/DW | FL/DW |  |
| 4 AND 8 ALT CHANGE | R | R | R | FL/Y | FL/Y | R | R | R | Y | Y | Y | Y | Y | Y | DW | DW | DW | DW |  |
| FLASHING OPERATION | FL/Y | FL/Y | FL/Y | DARK | DARK | FL/Y | FL/Y | FL/Y | FL/Y | FL/Y | FL/Y | FL/Y | FL/Y | FL/Y | DARK | DARK | DARK | DARK |  |

EQUIPMENT LIST "A, B & C"

A. EQUIPMENT TO BE SUPPLIED BY SHA.

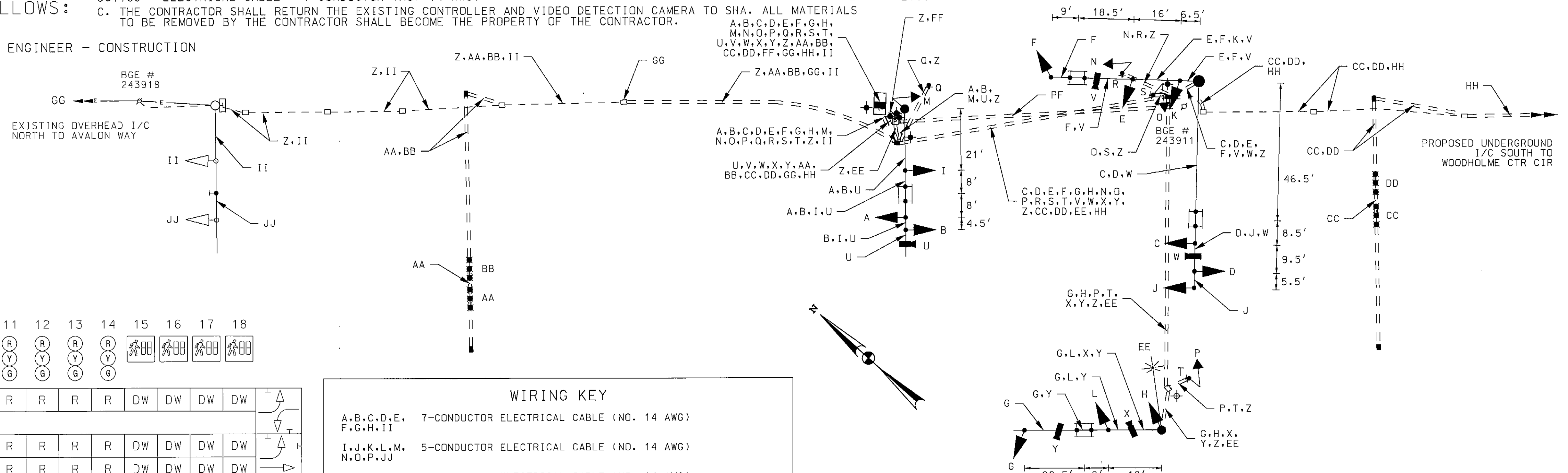
| ITEM NO. | DESCRIPTION | UNIT | QUANTITY |
|----------|---|------|----------|
| 900000 | SHEET ALUMINUM MAST ARM / POLE MOUNTED SIGN | SF | 162 |
| | 4 - M1-5(4) 78"X36" 2 - D-3(1) 90"X16" (DUAL FACE) | | |
| | 1 - W3-3a(1) FY 120"X48" 4 - R10-3(1) 9"X15" | | |
| | 2 - D-3(1) WHITE/BLUE 90"X16" (DUAL FACE) | | |
| 900000 | CONTROLLER CABINET, SIZE "S" W/CTRL. VIDEO INT. 1-8 CAM | EA | 1 |
| 900000 | UPS EQUIPMENT FOR "S" CABINET | EA | 1 |
| 900000 | 4 CHANNEL DETECTOR AMPLIFIER | EA | 1 |

B. EQUIPMENT TO BE FURNISHED AND/OR INSTALLED BY THE CONTRACTOR.

| ITEM NO. | DESCRIPTION |
|----------|-------------|
|----------|-------------|

| ITEM NO. | DESCRIPTION | UNIT | QUANTITY |
|----------|--|------|----------|
| 100000 | MAINTENANCE OF TRAFFIC (PER INTERSECTION) | EA | 1 |
| 201032 | CLASS 2 EXCAVATION | CY | 5 |
| 585621 | 12 INCH WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINES | LF | 295 |
| 585625 | 24 INCH WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINES | LF | 75 |
| 585700 | REMOVAL OF EXISTING PAVEMENT MARKING LINES, ANY WIDTH | LF | 3/5 |
| 600000 | TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH | LF | 114 |
| 600000 | TYPE A CURB ANY HEIGHT OR DEPTH | LF | 50 |
| 600000 | DETECTABLE WARNING SURFACE FOR CURB RAMPS (TYPE '3 BRICK PAVERS) | SF | 72 |
| 655105 | 5 INCH CONCRETE SIDEWALK | SF | 1013 |
| 704345 | PLACING FURNISHED TOPSOIL 4 INCH DEPTH | SY | 27 |
| 708220 | TURFGRASS SOD ESTABLISHMENT | SY | 27 |
| 800000 | 8 INCH LED VEHICULAR TRAFFIC SIGNAL HEAD SECTION | EA | 6 |
| 800000 | 2-WIRE APS CENTRAL CONTROL UNIT | EA | 1 |
| 800000 | ADJUST HANDHOLE TO GRADE AND REPLACE FRAME AND COVER | EA | 2 |
| 800000 | ANY SIZE LIGHTING ARM OR SIGNAL POLE WITH LED ROADWAY LUMINAIRE | EA | 1 |
| 800000 | AUDIBLE/TACTILE PEDESTRIAN PUSHBUTTON STATION AND SIGNS | EA | 4 |
| 800000 | 16 INCH LED COUNTDOWN PEDESTRIAN SIGNAL HEAD | EA | 4 |
| 800000 | IP-BASED VIDEO DETECTION CAMERA & ANY LENGTH LEAD-IN CABLE | EA | 5 |
| 800000 | 5 FOOT OR 10 FOOT PEDESTAL POLE WITH BREAKAWAY COUPLINGS, FOUNDATION & GROUND ROD | EA | 4 |
| 800000 | MAST ARM POLE & 50' MAST ARM ANY 'T' DIMENSION, FOUNDATION & GROUND ROD | EA | 2 |
| 800000 | TWIN MAST ARM POLE & 50'/70' MAST ARMS ANY 'T' DIMENSION, FOUNDATION & GROUND ROD | EA | 1 |
| 800000 | 100 AMP EMBEDDED METERED SERVICE PEDESTAL, CONCRETE COLLAR & GROUND RODS | EA | 4 |
| 800000 | NONINVASIVE DETECTOR WITH ANY LENGTH LEAD-IN CABLE UP TO 1000' | EA | 4 |
| 800000 | REMOVE & DISPOSE OF EXISTING SIGNAL EQUIPMENT (PER SIGNALIZED INTERSECTION LOCATION) | EA | 1 |
| 800000 | INSTALL CONDUIT AND BASE MOUNT ANY SIZE INCLUDING F&I FOUNDATION & GROUND ROD | EA | 1 |
| 800000 | INSTALL CABLE - CONDUCTOR (NO. 12 AWG) (B,W,G) TYPE TC | LF | 290 |
| 800000 | DISCONNECT, PULL-BACK & REROUTE CABLES | LF | 195 |
| 800000 | UP TO 4 INCH SCHEDULE 80 RIGID PVC CONDUIT - BORED OR SLOTTED | LF | 495 |
| 800000 | UP TO 4 INCH SCHEDULE 80 RIGID PVC CONDUIT-TRENCHED | LF | 405 |
| 800000 | INSTALL OVERHEAD OR GROUND MOUNTED SIGN (INCLUDING ALL HARDWARE) | SF | 162 |
| 800000 | THIRD PARTY CONCRETE TESTING (PER INTERSECTION) | EA | 1 |
| 802501 | NO. 6 AWG STRANDED BARE COPPER GROUND WIRE | LF | 1270 |
| 810022 | ELECTRICAL CABLE 1-CONDUCTOR NO. 8 AWG-THHN/THWN | LF | 50 |
| 811001 | FURNISH AND INSTALL ELECTRICAL HANDHOLE | EA | 6 |
| 810211 | 12 INCH LED VEHICULAR TRAFFIC SIGNAL HEAD SECTION | EA | 38 |
| 861192 | CUT, CLEAN, GALVANIZE AND CAP TRAFFIC SIGNAL STRUCTURE | EA | 1 |
| 861105 | ELECTRICAL CABLE - 2 CONDUCTOR (NO. 14 AWG) | LF | 610 |
| 861107 | ELECTRICAL CABLE - 5 CONDUCTOR (NO. 14 AWG) | LF | 710 |
| 861108 | ELECTRICAL CABLE - 7 CONDUCTOR (NO. 14 AWG) | LF | 2175 |

C. THE CONTRACTOR SHALL RETURN THE EXISTING CONTROLLER AND VIDEO DETECTION CAMERA TO SHA. ALL MATERIALS TO BE REMOVED BY THE CONTRACTOR SHALL BECOME THE PROPERTY OF THE CONTRACTOR. A,B,C,D,E,F,G,H,



WIRING KEY

| | |
|------------------------|---|
| A,B,C,D,E, F,G,H,I | 2-CONDUCTOR ELECTRICAL CABLE (NO. 14 AWG) |
| I,J,K,L,M, N,O,P,JJ | 5-CONDUCTOR ELECTRICAL CABLE (NO. 14 AWG) |
| Q,R,S,T | 2-CONDUCTOR ELECTRICAL CABLE (NO. 14 AWG) |
| U,V,W,X,Y | 1P-BASED VIDEO DETECTION CAMERA CABLE |
| Z | STRANDED BARE COPPER GROUND WIRE (NO. 6 AWG) |
| AA,BB | NON-INVASIVE MICROPROBE SET WITH 500 FT. LEAD-IN CABLE |
| CC,DD | NON-INVASIVE MICROPROBE SET WITH 1000 FT. LEAD-IN CABLE |
| EE | 3-CONDUCTOR ELECTRICAL CABLE, TYPE TC (NO. 12 AWG) |
| FF | 1-CONDUCTOR ELECTRICAL CABLE (NO. 8 AWG - THHN/THWN), 3 RUNS |
| GG | DISCONNECT, PULLBACK AND REROUTE EXISTING INTERCONNECT COMMUNICATION CABLE |
| HH | 12-PAIR COMMUNICATION CABLE, JELLYFILLED (SEE INTERCONNECT PLAN) |
| PF | PROPOSED UNDERGROUND POWER FEED |
| ⊕ | EXISTING GROUND ROD |
| ⬤ | PROPOSED GROUND ROD |



Rummel, Klepper & Kahl, LLP
81 MOSHER STREET | BALTIMORE, MD 21217
PH: (410) 728-2900 FAX: (410) 728-3160

Engineers Construction Managers Planners Scientists
www.rkk.com

GENERAL NOTES

1. THE CONTRACTOR SHALL VERIFY ALL PROPOSED POLE LOCATIONS PRIOR TO INSTALLATION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TERMINATING ALL SIGNAL CABLE TO THE APPROPRIATE TERMINALS AND PROPERLY LABELING EACH CABLE.
3. ALL UNUSED CABLE SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR.
4. ALL TRAFFIC SIGNAL FOUNDATIONS SHALL BE INSTALLED AT THE FINAL SIDEWALK OR CURB GRADE FOR CLOSED SECTIONS, HIGHEST ROADWAY PROFILE GRADE FOR OPEN SECTIONS. TO MEET CLEARANCES AS SPECIFIED IN MD 816.03, MD 818.01, MD 818.02 AND MD 818.04. THE CONTRACTOR SHALL VERIFY ULTIMATE GRADES PRIOR TO THE INSTALLATION OF ALL SIGNAL EQUIPMENT.
5. UNDERGROUND UTILITIES SHOWN ON THESE PLANS ARE SCHEMATIC ONLY AND MAY NOT BE COMPLETE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING "MISS UTILITY" PRIOR TO CONSTRUCTION SO THAT ALL UTILITIES MAY BE LOCATED IN THE FIELD. IF THE CONTRACTOR PERCEIVES THAT A CONFLICT BETWEEN THE UTILITIES AND THE TRAFFIC SIGNAL WILL OCCUR, THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER IMMEDIATELY SO THAT THE CONFLICT MAY BE RESOLVED.
6. ALL PEDESTAL FOUNDATION TOPS SHALL BE INSTALLED FLUSH WITH SIDEWALK GRADE.
7. LOCATION OF ACCESSIBLE PEDESTRIAN SIGNAL PUSHBUTTONS MUST MEET LOCATION REQUIREMENTS OF MUTCD SECTION 4E.10, FIGURES 4E-3 AND 4E-4, AND THE NCHRP PUBLICATION, ACCESSIBLE PEDESTRIAN SIGNALS: GUIDE TO BEST PRACTICE. IF NOT MET, THE CONTRACTOR IS TO STOP WORK ON PUSHBUTTON LOCATIONS UNTIL A DESIGN WAIVER IS OBTAINED, APPROVED BY THE DIRECTOR, OFFICE OF TRAFFIC AND SAFETY.
8. PUSHBUTTONS ARE TO BE LOCATED SO THAT THEY CAN BE ACTIVATED BY A PERSON IN A WHEELCHAIR REACHING LESS THAN 18" FROM A 60" X 60" LEVEL LANDING AREA WITH A CROSS SLOPE OF LESS THAN OR EQUAL TO 2%.
9. THE 10' SEPARATION BETWEEN PUSHBUTTONS IS TO BE MEASURED FROM FACE OF PUSHBUTTON TO FACE OF PUSHBUTTON. NOT CENTER OF POLE TO CENTER OF POLE.
10. PUSHBUTTON ARROWS AND SIGNS ARE TO BE ORIENTED PARALLEL TO THE CROSSING FOR WHICH THEY ARE INTENDED.
11. PROPOSED LUMINAIRES SHALL BE SUPPLIED WITH A PHOTOCCELL.
12. VIDEO DETECTION CAMERA ALIGNMENT SHALL BE COORDINATED WITH THE ENGINEER.
13. DURING CONSTRUCTION, PROPOSED SIGNAL EQUIPMENT SHALL NOT BLOCK EXISTING SIGNAL EQUIPMENT.
14. THE CONTRACTOR SHALL CAP AND ABANDON CONDUITS FEEDING EXISTING SIGNAL EQUIPMENT THAT IS REMOVED.
15. THE CONTRACTOR SHALL CONTACT MR. ED RODENHIZER AT THE SIGNAL SHOP (410-787-7650) TO DELIVER APS EQUIPMENT FOR TESTING.

| | | | | | |
|-----------|--|--|--|---------------------------------|--|
| REVISIONS | | GENERAL INFORMATION SHEET | | | |
| | | SCALE <u>NONE</u> DATE <u>JANUARY 2013</u> CONTRACT NO. <u>XY1515185</u> | | | |
| | | DESIGNED BY <u>WFW</u> | | COUNTY <u>BALTIMORE</u> | |
| | | DRAWN BY <u>WFW</u> | | LOGMILE <u>03014002.53</u> | |
| | | CHECKED BY <u>B.J.G</u> | | TIMS NO. <u>L825</u> | |
| | | FAP NO. _____ | | TOD NO. _____ | |
| | | TS NO. 6033F--G1 | | DRAWING <u>SP-2</u> OF <u>4</u> | |
| | | | | SHEET NO. <u>2</u> OF <u>5</u> | |

FILE: \\balsn03\p2008\2008\08148 fcd\Task 140 MD 140 at Mt Wilson & Woodholm: (L658)\CADD\pSG-0002 MD140\atGreyRock-Gl.can

BY: BJG